



16 Mar 1917

## The Missouri Miner, March 16, 1917

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# THE MISSOURI MINER.

Missouri School of Mines and Metallurgy, Rolla, Mo.

Vol. 3, No. 26.

Friday, March 16, 1917.

Price 5 Cents.

## EXTRA!

### WAS ST. PAT AN ENGINEER?

By E. Ross Housholder.

Does history prove St. Patrick to be an engineer?

With this question in mind a search was made in various places for facts that could prove St. Patrick to be an engineer. In another article in this issue of the Miner is an excellent brief legendary history of this saintly person, by Mr. Wheeler, our librarian. Going more into detail concerning certain of the facts there presented, we find evidence that Patrick made use of science in his good work in Ireland, the same as any other engineer.

In recent years St. Patrick has been accepted by many of the more prominent engineering schools as their patron saint, and well they might, for undoubtedly he accomplished some of the most notable engineering feats of his day. Throughout Ireland, in Scotland, England, Wales, and on the Isle of Man, there are to-day evidences of churches that are said to be constructed under the direction of this saintly person.

That the shamrock, or small white clover (*trifolium repens* of botanists) is practically identical with the trefoli in Persia, which in Arabic is called *sham-rakh*, and was held sacred in Iran as emblematical of the Persian Triads. Pliny, in his Natural History, says that serpents are never seen upon trefoli, and it prevails against the stings of snakes and scorpions. This, considering St. Patrick's connection with snakes, is really remarkable. Is it not reasonable to suppose that St. Patrick instigated

a huge engineering plan to have this trefoli planted over the dreary bogs and plains of Erin?

A popular legend relates that the Saint and his followers found themselves without a fire to cook their breakfast, or to warm their frozen limbs. Unheeding their complaints, Patrick desired them to collect a pile of ice and snowballs, which, having been done, he breathed upon it, and it instantaneously became a pleasant fire. But again, might we not construe this to be only another example of his broad engineering knowledge, in view of the discoveries in physics and chemistry dealing with temperature changes?

It was largely thru necessity that Patrick had to resort to his engineering knowledge, for the people of Ireland at that time had been in the habit of being mystified by the Druidical priests of the more ancient faith. These Druids, being great magicians, would have been formidable antagonists to any one of less scientific ability than Patrick.

From the foregoing then we may conclude that history proves that St. Patrick was an engineer in his day. For this reason he has been excepted as the patron saint of the engineers at the Missouri School of Mines, together with many of the other more prominent engineering schools of the country.

We have received our first copy of "The Fleur de Lis" from St. Louis U., St. Louis, Mo. It is a very good paper. Come often-

### PROGRAM FOR ST. PAT'S DAY, 1917.

8:30—Parade.

10:00—Knighting of Seniors,  
Norwood Hall.

12:00—Grub Pile.

2:30—Minstrel Show. Parker  
Hall. No Children.

8:30—Kiddie's Picture Show.  
Parker Hall. FREE.

9:00—Grand Ball Masque.  
Jackling Gymnasium.  
Music by Cicardi's  
Orchestra

### BY ORDER OF ST. PAT.

#### Grinnell Abolishes Baseball.

The faculty at Grinnell has abolished baseball for one year. It is hoped that this will stimulate an interest in the game that will warrant its being brought back next year.

Patronize our advertisers.



**Mass Meeting.**

March 12, 1917. Junior class in charge; H. S. Clark, chairman.

Talks on St. Pat's day by Maness, chairman of the parade committee; Flanders, of the float committee; Murphy, of the entertainment committee; Goldman, of the dance committee; Skeen, of the Dutch army, and Clark, committeeman in general. Everything points to one of the best celebrations in the history of the school.

Schiermeyer of the Y. M. C. A. announced that the Association will give a free dance Saturday night. You are cordially invited to attend.

Resolutions of condolence in regard to the death of Mrs. A. Ross Hill, wife of the president of our university, were adopted by unanimous vote of the assembled student body.

The next thing that came to our attention was the proposition to make the registrar, Mr. Kahlbaum, treasurer of the Rollamo Board. After discussion by Ambler, Clark, Ebmeier, and others, the proposition was unanimously passed.

Finally Prof. Dean gave one of his inimitable talks. He discussed the various school activities in general, and the St. Pat's celebration in particular. He promised that all the old Knights of St. Patrick would be in the parade.

After the talk, the mass meeting was turned over to the Senior Class for a class meeting.

M. O. Baxter, of the Henry L. Doherty Companies, gave a talk to the Senior and Junior Classes Wednesday morning about the opportunities which those companies offered to young technical graduates. Mr. Baxter's talk had special reference to the oil and gas engineering school of the company at Bartlesville, Okla.

**Notice, All Independents.**

See Elkins and pay your dues.  
HEIMBERGER.

**JUNIOR COLUMN.**

Feathers are certainly going to be flying. Chickens are coming in from all directions. Even Zeuch has a foul companion.

Yes, and whiskers are going to flying too, says the Seniors, if some of those Juniors with black whiskers don't keep out of sight.

Many of the Juniors got invitations to Dr. McRae's little party last Wednesday. One of those kind of parties where you come one at a time, and get knocked off.

Boyer is leaving our little city during the big celebration. The faculty must have been pretty hard on him.

Walter Zeuch was initiated into the Trowel Club last Monday night.

Duga is getting into competition lately. Murphy had them all going north all by himself Monday night.

The Juniors are all co-operating to make St. Pat's a big success. But one thing must be understood: don't trifle with the other fellow's gal in your good work.

There is some noise around this burg that one of our classmates is to be tangled in that net of holy matrimony within the next month. Bob Heller is pledged to secrecy, so no name was mentioned. But look out.

Besides State Geologist Buehler, the following Miners attended the annual dinner of the St. Louis Section of the A. I. M. E. at the St. Louis Club in St. Louis March 10, 1917: Dr. McRae, and Professor Forbes, of Rolla; S. P. Lindau, '12, of Herculaneum; C. G. Stifel, '16, and F. X. Nachtmann, '09, of St. Louis; O. L. Lumaghi, '16, of St. Francois, and D. B. Followill, ex-'06, of Collinsville, Ill.

Director McRae attended the funeral of Mrs. A. Ross Hill, at Columbia, March 11th, 1917.

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At The  
**City Barber Shop**  
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and WEAR**  
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**ST. PATRICK.**

St. Patrick, the apostle and patron saint of Ireland, is a figure about whom many romantic legends have grown, but of whose life few facts are definitely known. Perhaps this is because he was a man of deeds rather than of words; so that, although he left an autobiography, or "confession," it is concerned with his work rather than with himself.

Strangely enough Patrick was not an Irishman, but a Scotchman. He was born about 389 A. D., not far from Glasgow. His father was a deacon in the Christian (Roman) Church and a Roman citizen; for the Roman Empire at that time embraced most of the known world. At the age of sixteen, Patrick was kidnapped by Irish freebooters and carried to Ireland, where for six years he was a slave, tending cattle and pigs. His unhappy condition led him to seek consolation in prayer. Influenced, like Joan of Arc, by a dream or divine summons, he escaped from his master and fled to Gaul (France) and Italy, and entered a monastery near Cannes. After a few years he returned to Scotland; but a burning desire to preach the Christian doctrine to the heathen Irish induced him to leave his kinsfolk and return to France to prepare himself and obtain authoritative support for his mission. He studied for seventeen years, being ordained deacon in 418 A. D., and bishop 432 A. D. Fortified by his long preparation, aided by his thorough knowledge of the Irish language, and filled with enthusiasm, Patrick returned to Ireland, where his journeyings, his contest with the Druids, his foundation of churches, are the themes of many legends. His work appears to have been mainly in the northern half of the island. His chief opposition was from the Druidical priests, who, of course, resented his innovations. It is probable that he died at Armagh,

about 461 or 463, although both the place and the date are uncertain.

Many legends and controversies have arisen about St. Patrick. The most famous story is that he banished the snakes from Ireland, beating upon a drum as he drove them before him. According to another legend—which it is difficult for an Irishman to take at face value—he was an advocate of temperance, and it is said that he forbade his followers to indulge in spirituous refreshment until after the call to vespers had sounded in the evening. Still another legend says that he lived to be well over a hundred years old, and died on the 17th of March, 493. As a matter of historic fact, he died twenty years earlier; but as the exact date of his birth is unknown, legend and custom have taken this purely mythical date of his death, and made of it the anniversary which we call "St. Patrick's Day." And, to whatever far corner of the world the sons and daughters of Ireland may have gone, they have made St. Patrick's Day known the world around as the national holiday of Erin, when their hearts go back to the blue lakes and shamrock clad hills of the Little Green Island.

**Eight-Story Building Shattered by a Bomb.**

In the course of the action of "No-Good Guy," a five-reel feature photoplay, in which William Collier is starred, one of the most genuine bomb explosions ever staged before the camera takes place with a resultant wreck of an eight-story building.

It took the producer a month to make that short scene possible. He hunted all over California, it seemed, to find a building about to be torn down that he could destroy for the sake of his Collier story; but none could be found for a long time. At last he learned of an eight-story concrete structure, but recently con-

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**SMOKED MEATS**  
Fresh Fish Every Friday.

demned by the authorities because of some architectural defect. In the scene the building is rent asunder by an explosion that is seen to shoot upward thru the eight floors and cave in the side walls.

See this Friday night at Rolla Theater. The show will start at 7 P. M., and be out in time for the ball at the Gym.

Subscribe For The Miner.



**THE MISSOURI MINER.**

A weekly paper published by the Students, in the interest of the Alumni, Students and Faculty of the Missouri School of Mines and Metallurgy, Rolla, Mo.

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**NOTICE—LIBRARY CLOSED.**

The Library will be closed all day on Friday, St. Pat's day.

Fourteen senior men of Oberlin, living together at a college house, have sworn to abstain from linen collars until the price of collars goes back to normal. To carry out their protest they have donned celluloid collars, and carry with them the necessary laundering equipment, consisting of a sponge. Among the men are the editors of the college paper, (Eb, take notice) the football captain and manager, and two varsity debaters.—Californian.

These men ought to come to Rolla, and study economic conditions, and learn how to combat the collar trust.

Miss Eleanor McRae and her friend, Miss Myrtle Stosberg, of Kansas City, Mo., will come over from Columbia to take in the St. Pat celebration.

**Freshman Column.**

The Frosh are ready, in every sense of the word, for St. Pat's. We have heard of "St. Pat's" since the first day of school. We have helped all we can for the last two months, in order that St. Pat's would be a grand success, and we'll soon have the honor to participate in the celebration.

Stubbs visited his Kirkwood home last Saturday. Hasse and Ike Richmond visited St. Louis at the same time.

N. P. Johnson has become quite a regular visitor to St. James.

The members of the Freshman Class were guests at a surprise party given by the chemistry department Wednesday A. M. At 8:40 Problems and Reactions a la qualitative were the refreshments. The surprise was complete.

We upheld the time-worn custom of visiting "sinkum holler" and bringing back an ample supply of shillalahs for the Dutch army last Sunday.

R. W. Caples, '10, and wife, are in town for the St. Pat's celebration. Mr. Caples is assistant to the general manager of the Anaconda Zinc Co., of Great Falls, Mont. Their output is about 120 tons of zinc per day.

**St. Pat Special**  
**Rolla's Theatre**  
**TO-NIGHT**  
 Thursday, March 15th.  
**E. H. Sothern and**  
**Peggy Hyland**  
 in  
**"THE CHATTEL"**  
 AND  
**Frank Daniels.**  
**"KERNEL NUTT FLIRTS**  
**WITR WIFIE."**

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 Two Shows, 7:30 and 9:00.

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## Rollamo Picture Show

FRIDAY,

March 16, 1917.

**The No-Good Guy**

a 5-Reel Comedy  
 Featuring

**William Collier.**

There will be one show Friday night, starting at 7 o'clock sharp.

**10c**

**Rolla's Theatre**

St. Peter: "Have you ever kissed a girl?"

Geib: "No, sir."

St. Peter: "Has a girl ever kissed you?"

Geib: "No, sir."

St. Peter: "What are you doing here?"

Geib: "I'm dead."

St. Peter: "Why, you haven't ever lived yet."

Joe G. Wilson, ex-'17, of Ramsey, Mont., regrets that he will not be able to attend St. Pat's this year, but hopes that it will be the best ever.



### The Different Parts, and Method of Assembling a Forty-Ton, Forty-Foot, Steel Frame Box Car.

By W. C. H. Zeuch, '18.

Continued from Last Week.

The center sill or the main carrying member of the superstructure is first assembled. It usually made a "built-up" section, and consists of a cover plate 20 inches by 5-16 inch, two top chord angles  $3 \times 3 \times \frac{3}{8}$  inches, a 5-16 web plate, and two bottom chords  $3 \times 3 \times \frac{3}{8}$  inches. The web plate is made 30 inches deep for a distance of eight feet on either side of the center line of car, and tapers to a depth of from 12 to 14 inches at a point 18 inches from center line of trucks.

The top and bottom chord angles run to a point 30 inches beyond the center line of the truck.

The center sills are stiffened against lateral motion by means of three 5-16-inch steel plates riveted between the center sill webs. The draft sill is then riveted to the center sill webs by means of  $\frac{7}{8}$ -inch rivets. A sufficient number of rivets are used to prevent the shearing action that takes place between the center and draft sills when the cars are coupled up. The draft sill is quite often made of  $\frac{3}{8}$ -inch pressed steel plates. The depth of draft sill is governed by the kind of draft gear used.

The draft gear is a patented device made up of an arrangement of lugs and springs, into which the end of the coupler fits. Its function is to take up the shock when the cars are coupled together. The draft gear is shipped to the car builder, and all that they need to do is to rivet the gear to the draft sill. A  $\frac{3}{8}$ -inch steel plate is riveted to the bottom of the draft sill to keep them from spreading laterally.

The body bolsters are then riveted to the center sill web, and top and bottom angles. The

body bolsters are usually made of 5-16 inch pressed steel plates with a web, top and bottom flanges. The contour of the body bolster must be designed to meet the limiting conditions caused by the limited distance from rail to floor line of car. A  $\frac{3}{8}$ -inch steel top and bottom cover plate is riveted to the top and bottom flange of the body bolster to stiffen and strengthen it. A certain number of holes in top flange and cover plate are left open to take stringer bolts. The body center plate is riveted to the body bolster, bottom cover plate, and center sill bottom chord angles. This plate is made of cast steel, and its contour is circular. Its function, as explained before, is to permit the car to go around curved tracks. The body side bearings are then riveted to the body bolster, bottom flanges and cover plates by means of  $\frac{3}{4}$ -inch rivets. The side bearings are made of cast steel, and of such a depth as to allow a clearance of  $\frac{3}{8}$ -inch between the body and truck side bearings when the car is empty. Two holes are punched in the end flange of the body bolster, to which the sills are riveted.

The floor beams are a great deal like the body bolster in size of materials and contour, being made of 5-16-inch pressed steel plate with top, bottom and end flanges. A  $\frac{3}{8}$ -inch by 8-inch rolled steel plate is riveted to the top of flange of the floor beam. A sufficient number of holes are left open in the top flange and cover plate to take stringer bolts the same as at the bolster.

Continued Next Week.

Francis H. Walsh, '02, is chief electrician and master mechanic for the Compania Santa Gertrudis, Pachuca-Hidalgo, Mex. Of him a classmate writes: "A better practical electro-mechanical engineer I never expect to find, but then he should be, as he is from good old M. S. M."

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**Mass Meeting.**

March 5, 1917. Senior Class in charge; J. K. Walsh, acting President, chairman.

Dr. McRae announced that Dean McCaustland, of the University, will deliver a short address on "Student Councils," Monday morning, March 12th. Dean McCaustland has made a study of the subject of student self-government for several years, and is thoroughly competent to speak upon it. You cannot afford to miss this talk.

Coach Dennie announced that the track team will begin outdoor practice as soon as the warm weather begins. If you know anything at all about track, go out.

The Junior Class made several announcements. Stoner, Vet. D., and Clark told us, in a general way, of what we may expect on St. Pat's Day. Maness requested that all those interested in floats, teams, etc., see him at once.

It was also announced that Skeen, late of the Virginia National Guards, had been appointed Major-General of the Dutch Army, and that any one, regardless of race, color, or previous degree of servitude, was eligible to membership in this famous brigade.

After these announcements, Dr. McRae informed us of the deaths of H. A. Roesler and Mrs. J. B. Scott. Resolutions of condolence were drawn up and unanimously adopted by the assembled students.

Finally, the proposed constitution of the Student Council occupied our attention. After various discussions by members of the student body and the faculty, the constitution was adopted, after the elimination of the clause bearing on the power of the Student Council to make amendments.

Frank W. Cody, '13, has disposed of his hotel interests at Columbia, Mo., and is working in the C. & A. mill at Clifton, Arizona.

**SENIOR COLUMN.**

Tomorrow, men, we are to become Knights of St. Patrick. Outside of graduation day, this day should be the greatest one in our school career. Remember, men, that St. Patrick, our beloved patron saint, is looking down upon us with a benignant countenance, and that he expects us, his proteges, to act as gentlemen and as Seniors. Remember, fellow classmates, that the faculty, the other classes, and the visitors, are watching us. Let us conduct ourselves according to the best traditions of the school.

All old Knights of St. Patrick are very cordially invited to join us in the parade. We expect you—McRae, Dean, Barley, Ingram, Bowen, Cole, Forbes, McCandless, Van Hinsch, Frame, Harris, Mann, Clayton, Thornberry, Garrett, etc. We think you would like to be with us.

The Seniors will meet, in cap and gown, in front of Norwood Hall at 8:30 a. m. We lead the parade. We should, therefore, be on time.

At 10:30 a. m., we will be knighted by St. Patrick, himself, in the Ancient and Honorable Irish Order of the Knights of St. Patrick.

At 2:30 p. m. we will plant a tree on the campus in front of Parker Hall. This tree will be a living symbol in after years of the splendors and glories of the great class of '17.

ERIN GO BRAGH.

**"Shillalah."**

The word "Shillalah" is said to be derived from *Shillelagh*, a barony in County Wicklow, Ireland, famous for its oaks. The Century Dictionary defines a Shillalah as "an oak or blackthorn sappling used in Ireland as a cudgel." Shillalahs are also sometimes made of bogwood, which is extremely hard. A blackthorn shillalah may be seen on the Library bulletin board.

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**The Warren District.**

By R. L. Massey, ex-'18.

I write this short memoir, not in the hope of enriching the literature on this district, but in hopes of aiding any of the students of the School of Mines in selecting a camp for their summer's work.

The Warren District is approached by the El Paso & Southwestern R. R., with connections with the Southern Pacific at Benson, Ariz., and with all railroads running into El Paso, Texas.

Ore was found by the Copper Queen Mining Co. in about 1882, and they were the only large producers up to 1902, when the companies now consolidated in the Calumet and Arizona, began shipping. Since 1902 two other companies began producing, and added close to two million pounds of copper to the total production which is at present approximately 20,000,000 pounds per month. All ores are smelted at Douglas, where the C. & A. and C. Q. companies have smelters.

The Mule Mountains, in which the Bisbee ore deposit occurs, constitute a chain with a northwest to southeast axis rising abruptly near the international boundary, and extending for 26 miles, with a maximum width of ten miles opposite the city of Bisbee.

All ores of the Warren District are believed to be formed by metasomatic replacements of various rocks, mainly ores in porphyry, in contact breccia, in contact metamorphic limestone, and in relatively unaltered limestone. (See Geology of the Warren Mining District, by Y. S. Bonillas, J. B. Tenney and Leon Feuchere. Arizona Meeting A. I. M. E., 9-16.)

The main city of the Warren District is Bisbee, a strictly modern city of about 18,000 people, supporting five play houses, six lodge homes, and the finest Y. M. C. A. and Y. W. C. A. in the southwest. There are many other things here of interest to

the native, but not of sufficient interest to the summer worker to mention here.

My article was announced as a reminiscence of the conditions as seen on the grounds, and so far I have avoided my topic. I believe that during my stay here the district is in the most prosperous days of its existence, owing to the companies' development of low grade deposits on a large scale, and to high prices of copper, and high wages paid to the men.

As far as I can learn, this is at present the highest paying mining camp in the country. The lowest paid man underground receives \$5.75 per eight hours from collar to collar for his services as mucker miners receive \$6.00, and timbermen \$6.25. The men are paid upon a sliding scale based upon the price of copper. The base pay of a mucker is \$3.75 at 15c copper; for each 2c advance they get a bonus of 25c. (Quotations from E. and M. J.)

The mines require a good shift's work of the men, but well within the physical strength of a willing body. A machine man must be able to timber, run all machines, and break the rock. All men are required to pass a very strict physical examination before being employed underground. (See "Rat" Dale.)

The Copper Queen is at present operating six mines, namely, the Southwest, Czar, Holbrook, Gardner, Lowell and Sacramento, varying from a tunnel at the Southwest to 1600 feet in depth at the Sacramento. All ore is hoisted at the Sacramento, which is a 5-compartment concreted shaft; two 5-ton skip compartments, two 3-deck hoist compartments for men and timber, and a pipe and man-way compartment. The ore is dumped from the skips into a hopper, which feeds on a conveyor belt which carries it to the loading shed. Between 5,000 and 6,000 tons are hoisted daily at the Sacramento, with a production of 13,500,000 pounds per month.

Next in importance ranks the Calumet and Arizona Mining Co., with a production of approximately 6,000,000 pounds per month from the Cole, Oliver, Briggs, Houston and Junction mines. All C. & A. mines are in what is known as the lower end of the ore bodies, and are in depth from 1400 to 1825 feet at the Junction. The Junction is the deepest cemented shaft in this section of the country, and to my mind is the most interesting in the camp. It has the large pumps, pumping 3500 gallons of water per minute. The pumps are located on the 1500 and 1000 foot stations.

fl-and oinaet,hsrdlucmfywpvbg

The new work in progress is quite interesting, and each one would be a subject in itself. The C. Q. A. is sinking a 5-compartment shaft that will be over 2000 feet deep. The C. O. is starting on steam shovel operations to move Sacramento's hill and recover some 10,000,000 tons of low grade ore. A new concentrator of 3000 tons is being designed to handle this sulphide by flotation. Sacramento hill is 700 feet high, and is developed by 250,000 feet of churn drill holes. The "Shattuck" is planning on a 300-ton mill to handle a low grade silicious lead-gold silver ore.

Bisbee is 28 miles by stage Douglas, the home of the largest copper smelters in existence, 12 miles from Cananea, Sonora, Mex., where is located the largest proven mineralized area in North America, and the home of the Greene G. Cauard Copper Co. Two hours ride will take you to Tombstone, a camp whose history is more interesting than fiction. The fight with water in an attempt to sink a shaft into the bowels of the earth, and the flooding of some of the largest pumps in the world.

Attention, Miners! Watch the catalog for holidays. There is one coming Easter Sunday, April 8, 1917.